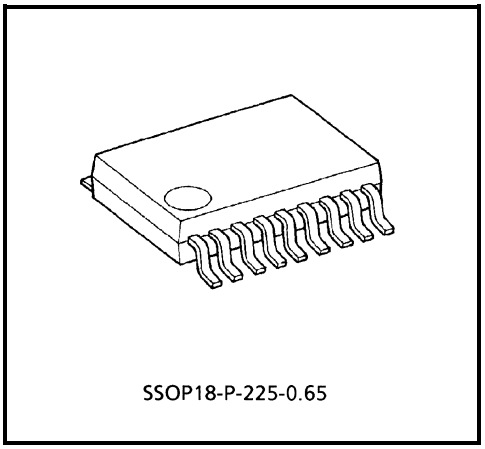
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62593AFN,TD62594AFN,TD62597AFN,TD62598AFN

8CH SINGLE DRIVER : COMMON EMITTER

The TD62593, 4, 7, 8AFN are comprised of eight NPN Transistor Arrays.
Applications include relay, hammer, lamp and display (LED) drivers.



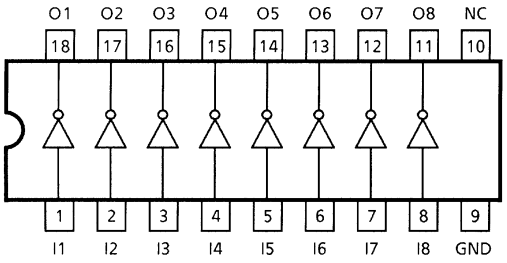
Weight: 0.09 g (Typ.)

FEATURES

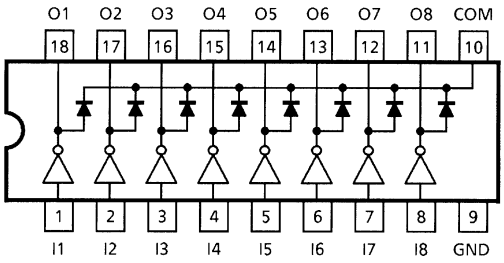
- Package Type : SSOP18pin (0.65 mm pitch)
- High Sustaining Voltage Output : 50 V (MIN)
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 0.8 V
  @I_{OUT} = 150 mA·Inputs Compatible with Various type Logic.
  TD62593AFN, TD62597AFN : R_{IN} = 2.7 kΩ TTL, 5 V CMOS
  TD62594AFN, TD62598AFN : R_{IN} = 10.5 kΩ 6~15 V PMOS, CMOS

PIN CONNECTION (TOP VIEW)

TD62593AFN, TD62594AFN

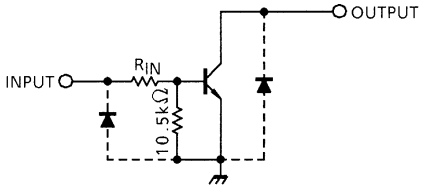


TD62597AFN, TD62598AFN



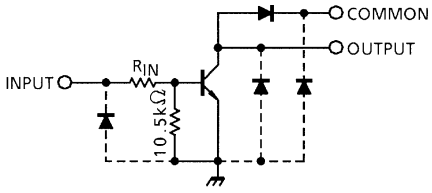
SCHEMATICS (EACH DRIVER)

TD62593AFN, TD62594AFN



TD62593AFN R_{IN} = 2.7kΩ
TD62594AFN R_{IN} = 10.5kΩ

TD62597AFN, TD62598AFN



TD62597AFN R_{IN} = 2.7kΩ
TD62598AFN R_{IN} = 10.5kΩ

Note: The input and output parasitic diodes cannot be used as clamp diodes.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector−Emitter Voltage	V_{CEO}	50	V
Collector−Base Voltage	V_{CBO}	50	V
Clamp Diode Reverse Voltage	V_R (Note 1)	50	V
Collector Current	I_C	200	mA / ch
Input Voltage	V_{IN}	−0.5~30	V
Power Dissipation	P_D (Note 2)	0.96	W
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

Note 1: Except TD62593AFN, TD62594AFN
Note 2: On Glass Epoxy PCB (50 × 50 ×1.6 mm Cu 40%)

RECOMMENDED OPERATING CONDITIONS (Ta = −40~85°C)

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Collector−Emitter Voltage		V_{CEO}		0	—	50	V
Collector−Base Voltage		V_{CBO}		0	—	50	V
Collector Current		I_C		0	—	150	mA / ch
Clamp Diode Reverse Voltage		V_R (Note 1)		7	—	50	V
Input Voltage		V_{IN}		0	—	25	V
Input Current		I_{IN}		0	—	10	mA
Input Voltage (Output On)	TD62593AFN TD62597AFN	$V_{IN\ (ON)}$		2.4	—	25	V
	TD62594AFN TD62598AFN			7.0	—	25	
Power Dissipation		P_D (Note 2)		—	—	0.4	W

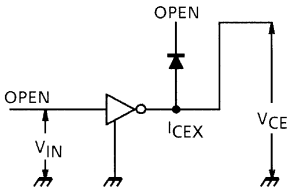
Note 1: Except TD62593AFN, TD62594AFN
Note 2: On Glass Epoxy PCB (50 × 50 × 1.6 mm Cu 40%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

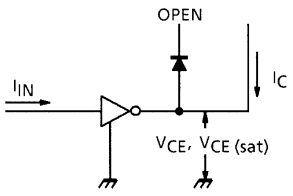
CHARACTERISTIC		SYMBOL	TEST CIR−CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CE} = 50 V, V_{IN} = 0	—	—	10	μA
Output Saturation Voltage		$V_{CE\ (sat)}$	2	I_C = 10 mA, I_{IN} = 0.4 mA	—	—	0.2	V
				I_C = 150 mA, I_{IN} = 3.0 mA	—	—	0.8	
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = 10 V, I_C = 10 mA	50	—	—	
Input Current	TD62593AFN TD62597AFN	$I_{IN\ (ON)}$	3	V_{IN} = 2.4 V, I_C = 50 mA	—	—	0.9	mA
	TD62594AFN TD62598AFN			V_{IN} = 7.0 V, I_C = 50 mA	—	—	0.9	
Turn−On Delay		t_{ON}	4	V_{OUT} = 50 V, R_L = 330 Ω	—	0.1	—	μs
Turn−Off Delay		t_{OFF}			—	3.0	—	

TEST CIRCUIT

1. I_{CEX}

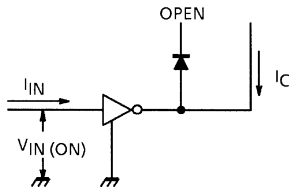


2. h_{FE}, $V_{CE\ (sat)}$

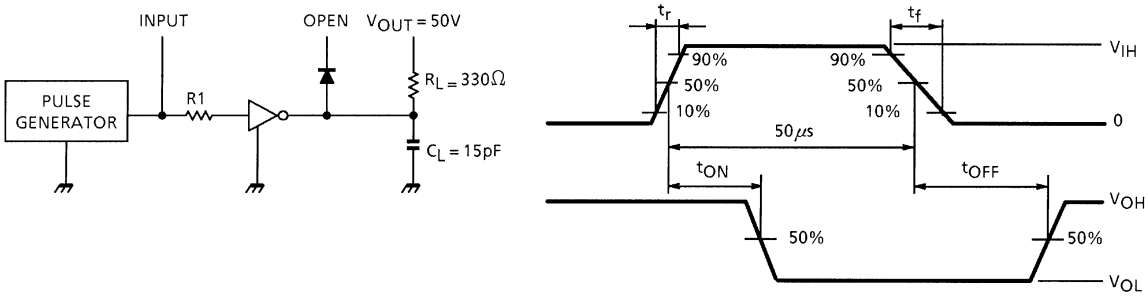


$$h_{FE} = \frac{I_C}{I_{IN}}$$

3. $I_{IN\ (ON)}$



4. t_{ON}, t_{OFF}



Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: See below

Input Condition

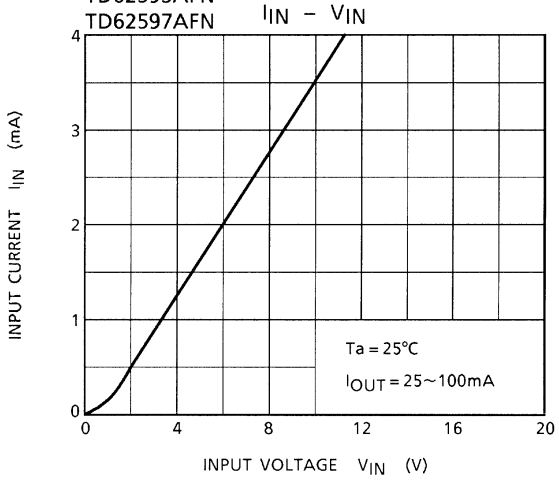
TYPE NUMBER	R_{IN}	V_{IH}
TD62593AFN, TD62597AFN	0 Ω	3 V
TD62594AFN, TD62598AFN	0 Ω	10 V

Note 3: C_L includes probe and jig capacitance

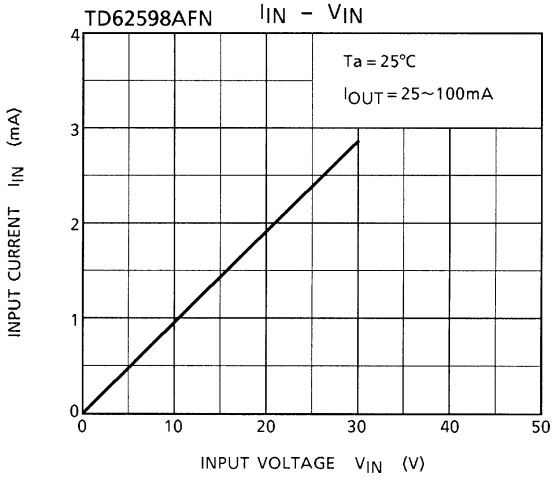
PRECAUTIONS for USING

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors.
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.
Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short−circuit between outputs, air contamination fault, or fault by improper grounding.

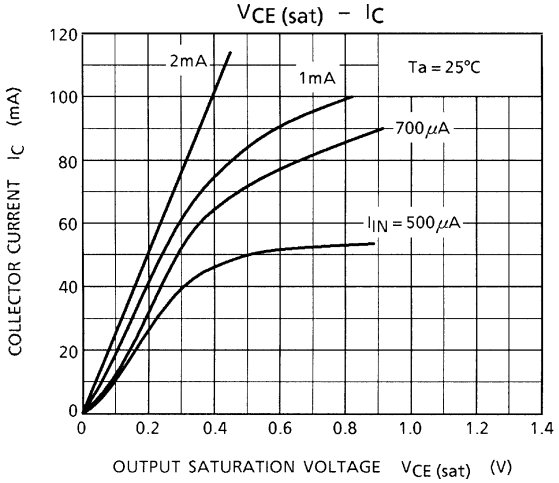
TD62593AFN
TD62597AFN I_{IN} – V_{IN}



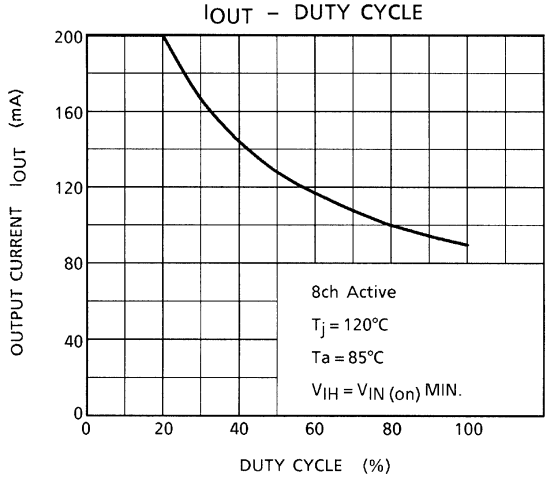
TD62594AFN
TD62598AFN I_{IN} – V_{IN}



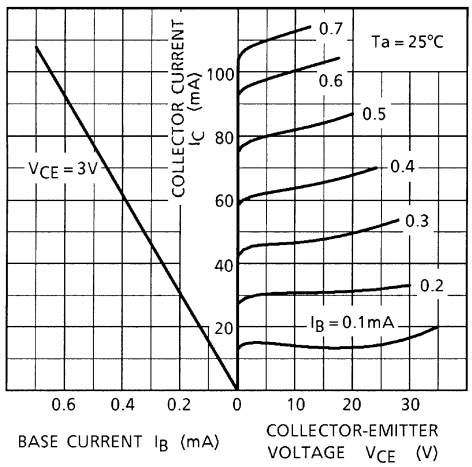
$V_{CE\,(sat)}$ – I_C



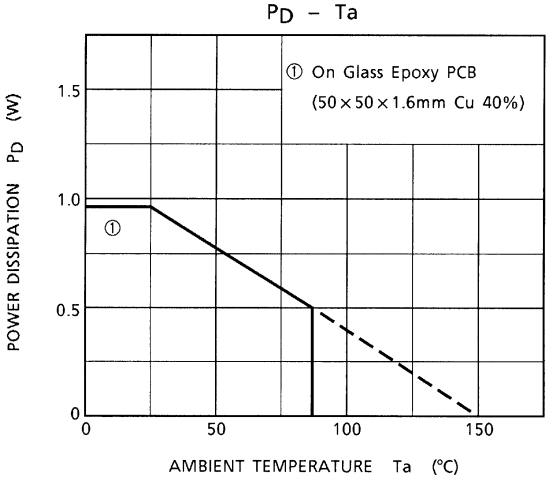
I_{OUT} – DUTY CYCLE



STATIC CHARACTERISTICS

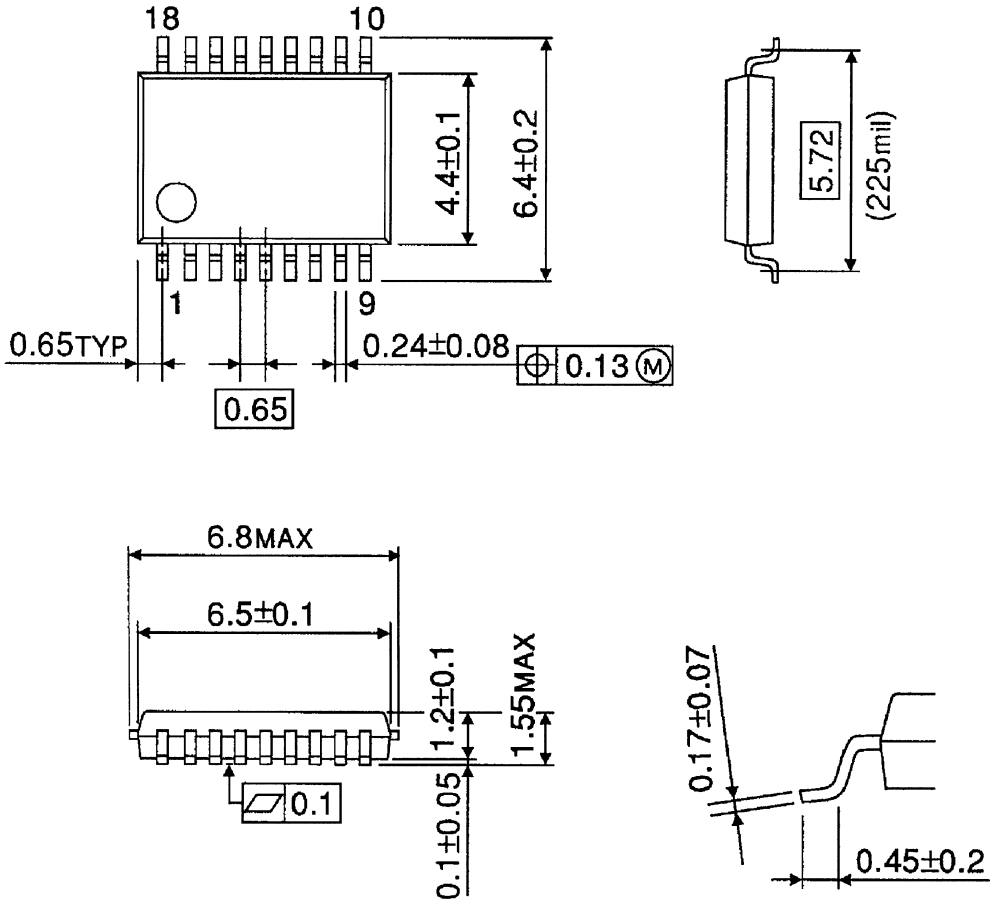


P_D – Ta



PACKAGE DIMENSIONS

SSOP18−P−225−0.65 Unit: mm



Weight: 0.09 g (Typ.)

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